DOCUMENT RESUME

ED 313 720 CS 506 792

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TITLE Inside the Agenda-Setting Process: How Political Advertising and TV News Prime Viewers Think about Issues and Candidates.
PUB DATE Aug 89
NOTE 52p.; Paper presented at the Annual Meeting of the Association for Education in Journalism and Mass Communication (72nd, Washington, DC, August 10-13, 1989).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Agenda Setting; *Association (Psychology); Audience Analysis; Long Term Memory; *Mass Media Effects; Media Research; *Political Influences; *Presidential Campaigns (United States)
IDENTIFIERS Bush (George); Dukakis (Michael); Issue Salience; Political Advertising; Political Rhetoric; *Priming Effects

ABSTRACT

A study of the agenda-setting influence of the mass media on adult viewers explored (in a series of five experiments) how political knowledge stored in long term memory can be activated by the media, leading to decisions about issue salience. Spreading activation theory formed the basis for the study, and priming--the concept that the activation of one thought causes activation of associated thoughts--was the method used to study the structure of memory. One hundred seventy-six participants (all from Travis County, Texas) were asked to view news stories and advertisements about 1988 presidential candidates George Bush and Michael Dukakis and about the issues of leadership and the economy. Findings included: (1) when the message content was held constant, the form of the message made no difference in either salience or knowledge scores; and (2) activation of memory favored pathways between knowledge nodes rather than between salience nodes. (An appendix listing the indexes used in the study, 39 references, three tables of data, and 12 figures are attached.) (MHC)

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Inside the Agenda-Setting Process: How Political Advertising and TV News Prime Viewers Think about Issues and Candidates

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Note: The authors wish to thank the National Political Advertising Research Project funded by the Gannett Foundation for their financial assistance. We also wish to thank Sandra Gaiser, Mark Bongiorno, Jinok Son and the members of the fall 1988 University of Texas, Journalism Research Methods class for their help in preparing stimulus materials, running subjects, and cleaning data. Thanks also go to Frank Biocca and two anonymous reviewers for their helpful comments.

CS506792

Paper presented to the Theory and Methodology Division of the Association for Education in Journalism and Mass Communication,

1989 Annual Convention, Washington, D.C.

Inside the Agenda-Setting Process: How Political Advertising and TV News Prime Viewers to Think about Issues and Candidates

Describing the agenda-setting function of the media has been the focus of one of the most enduring lines of research in the mass communication field. Walter Lippmann (1920; 1922; 1925) described the media's ability to determine what the public considers to be important, and Bernard Cohen (1963) is often remembered for telling us that the media are not very successful in telling us what to think, but stunningly successful in telling us what to think about. Empirical work on agenda setting has a much briefer history. McCombs and Shaw (1972) tested the agenda setting effect during the 1968 presidential campaign using surveys and content analysis. Since this time many facets of agenda setting have been explored empirically including the time lag involved (Stone & McCombs, 1981; Winter & Eyal, 1981) and issue vs. image agenda setting in presidential campaigns (Weaver, Graber, McCombs & Eyal, 1981). Recently, Iyengar, Peters & Kinder (1982) and Iyengar and Kinder (1987) provided experimental (cause-effect) evidence for the agenda setting function of television news.

Understanding the agenda setting function is important because very few people who vote for president of the United States will have personal contact of any kind with any of the candidates, nor will they have much direct, personal interaction with major campaign issues. Instead of traveling to Nicaragua, analyzing U.S. trade agreements with other nations or delving into any political issue in

depth, voters tend to rely on the media to present information that they can use on Election Day. This reliance on the media gives the media the power to determine political reality, or to set the political agenda (Iyengar & Kinder, 1984).

Studies to date have provided both field and experimental evidence for the basic idea of agenda setting. In addition, these studies have explored the contingent conditions that enhance or constrain the agenda-setting influence of the mass media. One of these contingent conditions, stated in terms of an individual's level of need for orientation (Shaw & McCombs, 1977), begins the task of explaining how the media affects the public agenda. This study continues the quest for turning inward and seeking explanations for the agenda-setting phenomenon by looking at the memory retrieval process that individuals must experience in order for agenda setting to occur.

Exposure to mediated information about political issues does not automatically result in the setting of the public's agenda. Individuals must first direct their attention to the information and then store that information in memory. They must match new information with old and retrieve the resulting representation from memory to make a decision about issue salience. Consequently, understanding how the media set the public agenda ultimately rests on understanding how attributes of media messages interact with the cognitive processing of the individuals who make up the public.

In this work we focus on how political knowledge stored in long term memory can be activated by the media and assume that

understanding this process will inform our understanding of how decisions about issue salience are made. The more micro cognitive processes of attention to and the encoding of political information into memory will be examined in related studies (Schleuder, 1989). We look at the retrieval of stored information from memory because it is the cognitive process that occurs just prior to decisions (such as determining the salience of an issue) and behaviors (such as reporting the salience determination when asked to do so by an interviewer). Thus, it seems the logical first inward step to take in the study of the agenda setting process within individuals. Although our goal is to obtain a better understanding of the agenda setting process, we do not draw on traditional agenda setting theory. Instead, we use spreading activation theory as a guide and draw heavily on the ideas about priming effects presented in recent mass communication research (Berkowitz and Rogers, 1986; Schleuder, Cameron & Thorson, 1989; Schleuder & White, 1989).

Priming and the Spreading Activation Theory of Memory

Berkowitz and Rogers (1986) describe the mental structure into which televised information enters as a network of thoughts, feelings and prior memories interconnected by associative pathways. The nodes in this network are activated by information picked up by our ears and eyes or by other internal nodes based on semantic relatedness, structural relatedness (e.g., words that sound similar) and contiguity. This model of how information is stored in memory matches what is currently known about neurophysiology (Squire, 1987).

Neurons correspond to nodes for some researchers (Anderson, 1978). Others argue that a node represents a set of neurons (McClelland & Rumelhart, 1981; Rumelhart & McClelland, 1986). The rate of neuronal firing, which some researchers believe to be the way information is encoded in the brain (Hinton & Anderson, 1981; Squire, 1987) can be thought of as the activation described by Berkowitz and Rogers (1986). A complete history and review of spreading activation theory can be found in Anderson & Bower (1973).

The method used to test spreading activation memory models is called **priming** (Anderson & Bower, 1973; Collins & Quillian, 1969; 1972; Collins & Loftus, 1975; Meyer & Schvaneveldt, 1971). An everyday example of how priming works would be a person's natural tendency to interpret an ambiguous word, such as bank, in terms of the most recent encounter with the concept. So, if a person watches a television news story about savings and loan foreclosures and an ambiguous conversational reference to "bank" occurs about a half hour later, the person is likely to think of bank as an institution rather than as one side of a river. Berkowitz and Rogers (1986) use priming to investigate television programming effects on children's thoughts and actions. According to these mass communication researchers, "When a thought element is activated, or brought into focal awareness, the activation radiates out from this particular node along the associative pathways to other nodes. As a consequence, for some time after a concept is activated, there is an increased probability that it and associated thought elements will come to mind again, creating what has been termed a priming effect. It is as if

some residual excitation has remained at the activated node for a while, making it easier for this and other related thoughts and feelings to be reactivated." (pp. 58-59).

Priming is used in this study to examine the structure of memory. Iyengar and Kinder (1986) report a series of experiments in News that Matters: Television and American Opinion that use priming to provide cause-effect support for the idea that television news can affect individuals' issue agendas. They refer to priming as the changes in the standards people use to make political evaluations that occur because issues become more readily accessible in people's minds shortly after they encounter them in the news. Iyengar and Kinder use priming to answer the question: Does the agenda setting effect exist? This paper begins with the assumption that under certain circumstances, described in an extensive literature, the media have an agenda setting effect. It then precedes to use a cognitive processing definition of priming and an associative network model of memory to ask the question: How does the agenda setting process occur within individuals' minds?

Figure 1 shows how activation of knowledge nodes within the minds of television viewers might look. This illustration assumes that viewers have just seen information about 1988 presidential candidate Michael Dukakis' leadership abilities and stands on economic issues. These viewers have not watched programming that deals with the other presidential candidate, George Bush. The pattern of activation shown is one that would be suggested by spreading activation theory for a situation in which people were primed to think about Dukakis.

Research Question and Hypotheses

Cognitive processing studies in mass communication often concentrate on how the formal features of television messages affect memory and attention (Alwitt, Anderson, Lorch & Levin, 1980; Bryant & Anderson, 1983; Reeves, Thorson & Schleuder, 1986; Schleuder, Thorson & Reeves, 1987; 1988; Thorson, Reeves & Schleuder, 1985; 1986). While studying the effects of pacing and complexity are common, and several researchers examine the effects of presenting the same information via different media (Bagget, 1979; Solomon, 1979), few studies have addressed how presenting the same information in different forms within the same media would affect the memory process. We compare how the same political information presented as an advertisement or as a news story affects memory retrieval in this study because the question has practical implications that address agenda setting concerns. Prior to a presidential election, viewers receive information about candidates and issues from political advertisements as well as from news stories. Some research has suggested that people learn more from watching political advertisements than from watching the news (Patterson & McClure, 1976). If people expend more mental effort with advertisements than with the news, ads may turn out to have the stronger agenda-setting effect. If advertisements are more effective in conveying information (or in setting agendas), understanding why would be an important goal for communication research. Determining whether advertisements lead to better learning simply because they are advertisements (their form) is one logical step is exploring their

agenda-setting function. Consequently, we designed an experiment that would isolate presentation form as the reason why people seemed to learn more from ads than from news. An analysis of viewer visual and verbal memory for information presented in this experiment showed that visual memory was better for advertisements than for news stories ($F(1,174) = p < .001$). The mean for visual recognition was 3.67 out of 4 for advertisements and 2.99 for news stories. The form in which political information was presented did not significantly affect verbal recognition, and there were no interactions between form and candidate or form and issue for either recognition measure (Schleuder, 1989). Rather than assess viewer ability to remember exactly what they have seen and heard while watching television, this study examines whether political advertising is better able to activate semantically related political information than political news when the visual and verbal information presented is held constant.

Form Question: Will political information presented in the form of advertisements be a more effective prime than information presented in the form of news stories? In other words, will one presentation form result in better retrieval of information from long term memory as indicated by higher knowledge and salience scores?

This study's four hypotheses address whether different content features of televised political messages activate semantically related information in long term memory as predicted by the spreading activation model's description of priming effects (Anderson & Bower,

1973; Berkowitz & Rogers, 1986). The content features include two campaign issues (leadership and the economy) and the two 1988 presidential candidates (Michael Dukakis and George Bush). The strongest support for the model would be found if the results show that subjects retrieve more prime-related information from memory than nonprimed information.

H1: Dukakis Prime: Subjects who see ads or news stories about Dukakis' leadership potential and his stands on economic issues (Dukakis prime group) will retrieve more information about Dukakis than people in a no-prime control group, as indicated by higher Dukakis knowledge scores. But for Bush knowledge scores, there will be no difference between the Dukakis prime and no-prime groups. Dukakis primed subjects will also retrieve more information about leadership and about the economy than the no-prime group as indicated by salience and knowledge scores that are higher than those for the no-prime group.

H2: Bush Prime: Subjects who see ads or news stories about Bush's leadership potential and his stands on economic issues (Bush prime group) will retrieve more information about Bush than people in a no-prime control group, as indicated by higher Bush knowledge scores. But for Dukakis knowledge scores, there will be no difference between the Bush prime and no-prime groups. Bush primed subjects will also retrieve more information about leadership and about the economy than the no-prime group as indicated by salience and knowledge scores that are higher than those for the no-prime group.

H3: Leadership Prime: Subjects who see ads or news stories about leadership potential for Bush and Dukakis (leadership prime group) will retrieve more information about leadership than people in a no-prime control group, as indicated by higher leadership salience and knowledge scores. But for economy salience and knowledge scores, there will be no difference between the leadership prime and no-prime groups. Leadership primed subjects will also retrieve more information about Dukakis and Bush than the no-prime group as indicated by salience and knowledge scores that are higher than those for the no-prime group.

H4: Economy Prime: Subjects who see ads or news stories about Bush and Dukakis stands on the economy (economy prime group) will retrieve more information about the economy than people in a no-prime control group, as indicated by higher economy salience and knowledge scores. But for leadership salience and knowledge scores, there will be no difference between the economy prime and no-prime groups. Economy primed subjects will also retrieve more information about Dukakis and Bush than the no-prime group as indicated by salience and knowledge scores that are higher than those for the no-prime group.

EXPERIMENT 1: FORM

The question of whether political information presented in the form of advertisements is a more effective prime than information

presented in the form of news stories is addressed in this experiment.

Method

Subjects

A total of 176 people participated in this study. Forty-two individuals were recruited from churches and social groups in Travis County, Texas and their organizations were paid $5 for their participation. The 134 undergraduate communication students participated for course credit.

Stimuli

Eight 30-second political advertisements that aired during the 1988 presidential campaign and eight news stories produced by Channel 24 in Austin, Texas were experimental stimuli for this study. Advertisements were embedded in an episode of Cheers along with product advertisements. The news stories were embedded in the local evening news. The eight news stories were introduced by a news anchor and were presented as realistic news stories. They were created to resemble the eight advertisements as closely as possible. The eight news stories were taped at Channel 24 just prior to the regular newscast in which they were embedded. The news anchors wore the same clothes and introduced the stories so that the flow of the news program was uninterrupted. In addition, stories about the presidential candidates and issues under study were removed from the newscast.

Eight advertisements and eight news stories were used to enhance generalizabilty of the effects to other political advertisements and news stories. Generalizations about television message effects should never be based on one message per condition because idiosyncratic characteristics of individual messages could account for the results (Jackson & Jacobs, 1983). In order to keep the viewing experience as natural as possible, each subject saw only four advertisements or four news stories during their half-hour viewing session. There were four 90-second commercial pods in the newscast and four in Cheers. One political commercial was placed in each commercial pod in Cheers. Twelve product advertisements were presented in the newscast. Eight of these were shown in Cheers. The order in which the political commercial fell in the pod (first, second or third) and the pod order (four orders) were counterbalanced to control for practice and fatigue effects. The order in which the news stories were presented was also counterbalanced (four orders). Which four ads or news stories each group of subjects saw was also counterbalanced (four viewing groups).

Because it was important that the newscast look as natural as possible, 12 pretest subjects viewed the local newscast. They were told that the newscast had been altered and it was their job to detect the alterations. Eight of the 12 said nothing about the newscast had been altered. None of the remaining four people was able to detect the experimental manipulation.

Experimental Procedure

Subjects were run one at a time after being randomly assigned to view either political advertisements embedded in Cheers or the local newscast containing four political stories. Before the experiment began, each subject was told that he or she had signed up to participate in two entirely separate studies: one involved watching television and a second study involved answering a questionnaire. The experimenters told the subjects that they did not know what the survey-type questions would be about since it was not their study.

Subjects were then told that the purpose of the television viewing study was to see how much they could remember from watching television. Those in the advertisement treatment groups viewed part of an episode of "Cheers" and a product commercial on a practice tape. They were then given visual and verbal recognition tests about information in the program and in the commercial. Those in the news treatment groups saw a portion of a newscast and a product commercial on their practice tape. They were also tested on information contained in the news and in the commercial. Subjects in all groups then viewed one-half hour of programming and commercials. They were given visual and verbal recognition tests following the viewing period. The tests given to those viewing the advertisements focused primarily on "Cheers," but included questions about both product and political advertisements. The tests given to those viewing the news primarily asked questions about each of the news stories, but also included questions about the product commercials present in the newscast.

All subjects were then escorted by a different experimenter to another area of the building. They were told that this study had to do with the upcoming presidential election. All 176 subjects were then interviewed in person.

Apparatus

The subjects watched the treatments on a 19-inch Panasonic 2010 video monitor. The advertisements and programming were played on a Panasonic 6500 videotape recorder.

Design and dependent measures

Form was a between-subjects factor with two levels: political advertisement and political news story.

Two salience and four knowledge measures assessed priming effects for this study. (Appendix A lists the items and indexes.)

Measures of salience apply only to the two issues included in the study. The **Leadership salience** index was created by combining the percentage of respondents who ranked the importance of presidential leadership as an issue as 1 or 2 with the percentage of respondents who ranked presidential leadership 1 or 2 as an attribute that presidents should have. These two ranking questions were combined with questions about how the respondent's choice for president was evaluated on a seven-point scale for "leadership ability, political experience, and communication skills." The **Economic salience** index was comprised of the percentage of respondents who ranked the importance of the national economy as the first or second most

important issue facing the nation today and questions about how the respondent's choice for president was expected to perform on a seven-point scale in "strengthening our nation's economy and balancing the federal budget".

The **Dukakis knowledge** index was comprised of four general questions about Dukakis, such as "Who is Mike Dukakis' running mate?" None of these questions, or any of the knowledge questions used in the study, were answered in the commercials/news stories. The **Bush knowledge** index was also comprised of four general questions about Bush, such as "Who is George Bush's running mate?"

Leadership knowledge was assessed by asking about candidates' past leadership roles and for their stands on abortion. **Economic knowledge** was assessed using the question: "Can the president veto specific items of the federal budget prepared by Congress or must he approve/veto the budget in its entirety?" Asking questions about the national debt or unemployment was precluded because these issues were discussed in the commercial/news stories. (Descriptive statistics and Cronbach's alpha coefficients are listed in Table 1 for each dependent measure.)

It is important to note that the use of these knowledge indexes assumes that subjects had previously encountered the general political information about the candidates and issues addressed by the items. It also assumes that they stored the information in long term memory.

Results

Salience and Knowledge scores for subjects who saw advertisement primes before completing the questionnaire were compared to those who saw news story primes. A one-way, between-subjects analysis of variance produced no differences between the groups viewing advertisements and the groups viewing the news on any of the dependent measures.

Discussion

Contrary to the findings of Patterson and McClure (1976), television advertisements were no more effective than TV news stories in conveying political information. There were no significant differences between the two groups on any of the dependent measures. While form is one of the most basic differences between advertising and news stories, many other differences exist that may have accounted for the earlier field study finding. For example, the communication intent of the two message types differ. Advertising is meant to persuade and news to inform. In any event, when message content was held constant, form of presentation did not yield any differences in salience or political knowledge scores.

CANDIDATE AND ISSUE PRIMING

Experiments 2-5 compare the salience and knowledge scores produced by subjects who were primed by viewing political information about specific issues with scores produced by a group of people who

did not participate in the television viewing experiments. These nonprimed control group people were part of a probability sample who were interviewed by telephone during the same time (during the 20 days that preceded the 1988 presidential election) that the experiments were run. The no-prime group provided the same measures as the primed groups.

Because the number of subjects in each primed group was so small (n=44 for Experiment 2; n=22 for Experiments 3-5), we collapsed across the presentation form factor so that each primed group now had either 88 or 44 subjects -- half from the advertising condition and half from the news story condition.

In order to compare the experimental group to the no-prime control group, it was important to determine whether the two groups were similar on attributes that would affect the results of this study. For example, it is likely that better educated people would think more about the candidates or issues whether they had been primed to do so or not. It is also likely that people who pay a lot of attention to political news in the newspaper and on television would be more likely to think more about candidates or issues even without an immediate prime. To determine if the two groups were roughly equivalent samples, the random sample of registered voters (no-prime control group) and the convenience sample (primed experimental group) were compared on all questionnaire items. Chi-square tests were used for all nominal variables and analyses of variance were computed for all other variables. Only a few differences were found.

There was no difference between the groups on education level, but, respondents in the control group had higher incomes and were older. This was expected given the high concentration of college students in the experimental group. There were no differences in the amount of attention paid to political advertising on television. However, individuals in the control group read newspapers more often, including stories about international affairs, national government, local politics, features about ordinary people and editorials and opinion columns. People in the control group also said they paid more attention to these stories than did the subjects in the experiments.

The control group watched more national and local news and paid more attention to national and local news. The control group also responded correctly more often on questions about political knowledge and general knowledge.

Individuals in the experimental group scored higher on only two items: they tended to read entertainment and sports stories more often and paid more attention to situation comedies than respondents in the control group.

Because differences between the groups existed on media use and general knowledge, indexes for these two variables were constructed to be used as covariates so that the two samples could be equated on these factors before the analyses of variance were conducted.

The media use index was comprised of five items, such as "How many days in the last seven did you read a newspaper?" and the knowledge index was comprised of five items which asked respondents

to, for example, name their senators and state representative. Table 2 lists the descriptive statistics for these two control variables and their Cronbach's Alpha coefficients.

It is important to note that even though these two groups were similar on many factors that might affect political knowledge and salience scores and equated on others, there may be other relevant factors on which the two groups vary.

EXPERIMENT 2: DUKAKIS PRIME

Subjects

Eighty-eight of the subjects described in Experiment 1 participated in the prime condition. Two hundred and twenty individuals participated in the no-prime condition.

Telephone Survey Design

The telephone survey of 220 registered voters was conducted by 22 graduate students in an introductory research methods course. The names selected for interviewing were a systematic random sample of Travis County, Texas voters. Since the Travis County voting list is compiled by precincts, use of a systematic random sample insured proportional geographic spread of the sample across the entire county.

Stimuli

Four of the eight political advertisements described in Experiment 1 and their corresponding news stories were used in this

experiment because they presented information about Dukakis, but not about Bush. Two of these political messages described Dukakis' leadership ability, two presented Dukakis' stands on economic issues.

These four advertisements were selected from of a population of 34 political advertisements that aired during the 1988 presidential campaign. The 34 ads were collected from the respective parties, from the Political Advertising Archive at The University of Oklahoma and by recording them off-air. The advertisements used were judged by four coders to be the Dukakis ads that were the most prototypical examples of commercials about the economy and leadership. There was no variation in the rating scores assigned to the advertisements used in this study. They were all ranked either first or second by the coders. The coders were graduate students in an introductory research methods course.

News stories were created to correspond with the advertisements in the manner described in Experiment 1.

Experimental procedure, apparatus and dependent measures

Subjects followed the same procedure as in Experiment 1. The apparatus and dependent measures used in Experiment 1 were also used in this experiment.

Design

Priming is a between-subjects factor with two levels: Dukakis primed and no-prime.

Results

Hypothesis 1 predicted that people who saw four advertisements or news stories for Dukakis prior to completing the questionnaire would produce higher Dukakis knowledge scores than the respondents who were not primed. One-way, between-subjects analysis of covariance (controlling for media use and general knowledge) produced the predicted differences between priming groups. As shown in Figure 2, Dukakis subjects had higher Dukakis knowledge scores than non-primed respondents ($F(1,244) = 8.39$, $p < .01$). Also as predicted, Dukakis primed subjects scored higher on economic knowledge than no-prime subjects ($F(1,244) = 4.94$, $p < .05$). Primed subjects also had higher leadership knowledge scores ($F(1,244) = 4.49$, $p < .05$). These results are shown in Figures 3 and 4. As predicted, there was no effect for Bush knowledge. There were also no effects for leadership and economy salience.

Discussion

Subjects who watched four political messages that described Dukakis' leadership ability and stands on economic issues were better able to retrieve political knowledge stored in memory about Dukakis, the economy and leadership. Priming worked well for political knowledge. More importantly, for political knowledge, the pattern of results fit the spreading activation's conceptualization of memory structure perfectly (see Figure 1). Dukakis primed subjects experienced enhanced recall for political information related to the information they had watched on television but were no better at

recalling information about Bush than nonprimed subjects. Salience scores, however, were not affected by Dukakis priming.

EXPERIMENT 3: BUSH PRIME

Subjects

Forty-four of the subjects described in Experiment 1 participated in the prime condition. Two hundred and twenty individuals participated in the no-prime condition.

Survey design, procedure, apparatus and dependent measures

The survey design, experimental procedure, apparatus used and dependent measures were identical to those in Experiment 2.

Stimuli

Four of the eight political advertisements described in Experiment 1 and their corresponding news stories were used in this experiment because they presented information about Bush, but not about Dukakis. The four advertisements were selected in the manner described in Experiment 2 such that two of these political messages described Bush's leadership ability, two presented Bush's stands on economic issues. News stories were created to correspond with the advertisements in the manner described in Experiment 1.

Design

Bush priming was a between-subjects factor with two levels: Bush primed and no-prime.

Results

Hypothesis 2 predicted that people who saw four advertisements or news stories for Bush prior to completing the questionnaire would produce higher Bush knowledge scores than control group respondents. Analysis of covariance produced no differences between the primed and the no-prime groups for Bush knowledge. However, as shown in Figures 5 and 6, subjects who were primed with Bush commercials or news stories did have higher scores on economic knowledge ($F(1,247) = 4.01$, $p < .05$) and leadership knowledge ($F(1,247) = 17.65$, $p < .001$). Subjects in the primed groups scored higher on Dukakis knowledge ($F(1,247) = 8.99$, $p < .01$) [shown in Figure 7]. This finding was not predicted. There were no effects for economic and leadership salience.

Discussion

We expected subjects who watched political messages about Bush to produce higher Bush, leadership and economy knowledge scores than those produced by people who were not primed. The results indicate that messages about Bush activated knowledge stored in long term memory related to leadership and the economy. However, instead of enhancing recall for information about Bush, Bush priming enhanced recall for information about Dukakis. These results may indicate that the spreading activation model is not the best heuristic to use in trying to understand how the viewers of political messages retrieve political information from memory. They may also indicate that the closest semantic links in memory to Bush have to do with

Dukakis rather than with other bits of information about Bush.

Collins and Loftus (1975) found that "isnota" links between concepts stored in memory could lead to facilitated activation and faster and better retrieval of information than "islikea" links. Perhaps the type of political campaign Bush ran emphasized the differences between the candidates such that people primed to think about Bush were better able to think of ways in which Bush was not like Dukakis. It's possible that this type of thought process resulted in better recall for information about Dukakis.

As in Experiment 2, salience scores did not differentiate between priming conditions.

EXPERIMENT 4: LEADERSHIP PRIME

Subjects

Forty-four of the subjects described in Experiment 1 participated in the prime condition. Two hundred and twenty individuals participated in the no-prime condition.

Stimuli

Four of the eight political advertisements described in Experiment 1 and their corresponding news stories were used in this experiment because they presented information about leadership for both Bush and Dukakis, but did not discuss economic issues. The four advertisements were selected in the manner described in Experiment 2. News stories were created to correspond with the advertisements in the manner described in Experiment 1.

Survey design, procedure, apparatus and dependent measures

The survey design, experimental procedure, apparatus used and dependent measures were identical to those in Experiment 2.

Design

Priming is a between-subjects factor with two levels: leadership primed and no-prime.

Results

Hypothesis 3 predicted that people who saw four advertisements or news stories about presidential leadership would produce higher leadership knowledge and salience scores than no-prime respondents. Figure 8 shows that primed subjects scored higher on leadership knowledge than control respondents ($F(1,250) = 4.71$, $p < .05$). As shown in Figure 9, primed subjects also scored higher on Dukakis knowledge than the control group ($F(1,250) = 18.89$, $p < .001$). As predicted, no differences between the priming conditions was found for economic salience. Counter to the predictions, people in the primed group scored higher on economic knowledge ($F(1,250) = 4.44$, $p < .05$) [shown in Figure 10]. The predicted effects were not found for leadership salience or Bush knowledge.

Discussion

Watching political messages about the leadership ability of both presidential candidates resulted in better retrieval of information about related leadership issues. It also produced the predicted

priming effect for Dukakis knowledge. Again, as in Experiment 3, Bush knowledge scores did not differ as a function of priming although a priming effect was predicted for Bush knowledge. As in Experiments 2 and 3, priming did not affect salience scores. Knowledge results again provide a fairly good fit to the spreading activation model, although messages about Bush do not seem to enhance viewer ability to retrieve Bush-related information from memory.

EXPERIMENT 5: ECONOMY PRIME

Subjects

Forty-four of the subjects described in Experiment 1 participated in the prime condition. Two hundred and twenty individuals participated in the no-prime condition.

Stimuli

Four of the eight political advertisements described in Experiment 1 and their corresponding news stories were used in this experiment because they presented information about the economy for both Bush and Dukakis, but did not discuss leadership. The four advertisements were selected in the manner described in Experiment 2. News stories were created to correspond with the advertisements in the manner described in Experiment 1.

Survey design, procedure, apparatus and dependent measures

The survey design, experimental procedure, apparatus used and dependent measures were identical to those in Experiment 2.

Design

Priming is a between-subjects factor with two levels: economy primed and no-prime.

Results

Hypothesis 4 predicted that people who saw four advertisements or news stories about the economy would produce higher economy salience and knowledge scores than respondents who were not primed. As shown in Figure 11, analysis of covariance produced the predicted main effect for economic knowledge ($F(1,249) = 4.13$, $p < .05$). The primed group also scored higher on Dukakis knowledge ($F(1,249) = 9.56$, $p < .01$) [shown in Figure 12], providing partial support for the prediction that people in the primed group would score higher on items about Dukakis and Bush. No effects for economic salience or Bush knowledge were found, although they were predicted.

Table 3 summarizes the primary and secondary priming predictions and shows the pattern of results.

Discussion

Like the results produced by the Dukakis priming experiment, these results provide a good fit for the spreading activation model of memory for political information. Subjects who watched political messages about the economy produced higher economy knowledge scores than people who were not economy primed. Priming facilitated information retrieval for Dukakis knowledge scores, as predicted. Also as predicted, there was no difference between priming conditions

for leadership knowledge scores. The model predicted that priming would enhance Bush knowledge scores. As in Experiments 3 and 4, this enhancement was not found in the data. As in all four content feature priming studies, issue salience effects were not found.

General Discussion

Four obvious patterns emerge when the results of the four political message content feature priming experiments are examined together (see Table 3). First, the knowledge results tend to support the spreading activation model conceptualization of memory, but salience scores do not. The major exception to finding a good fit for the model in the knowledge data is provided by the Bush priming conditions. Viewing information about Bush just prior to being asked to retrieve related information about Bush from memory never results in superior Bush knowledge scores. On the other hand, viewing any political message at all enhances memory retrieval for information about Dukakis and the economy. It's interesting to note that while all four priming groups had higher Dukakis knowledge scores than the nonprimed group, the knowledge score in the Dukakis primed condition was considerably higher than the knowledge scores in the other three experimental conditions.

If memory is structured as described by spreading activation theorists, then a historical explanation might account for the distinct priming patterns produced by the two 1988 presidential candidates. As mentioned earlier, the type of campaigns run by the candidates may have contributed to the dramatic differences found in

priming effects between Bush and Dukakis. Or, what may be at work here is a situation in which people have close links in memory between many 1988 presidential campaign issues and Dukakis, but have distant, weak links between general political information and Bush. After all, as vice president, Bush was a major supporting player on the political stage for eight years prior to the 1988 campaign, and he quickly emerged from the primary pack to be the Republican nominee. In contrast, Dukakis was a new player on the national political stage, who only emerged from the primary pack late in the season. Novelty has a very strong enhancing effect on information processing (Reeves, Thorson & Schleuder, 1988). Perhaps people formed a stronger general association between the 1988 election and Dukakis than between the 1988 election and Bush because Dukakis was a novel political figure.

Even if a historical reason exists for the Dukakis and Bush priming results that fail to meet the model, their failure-of-fit suggests a minor modification of the spreading activation model. This set of experiments was designed to observe the results of priming on very specific points, the pattern of results suggests that exposure to any of a rather wide variety of campaign information resulted in activation of the pathways between many nodes in a larger network that could roughly be labeled "the 1988 presidential campaign network." The existence of such distinct networks is suggested by findings from an earlier field study. Williams, Shapiro and Cutbirth (1983) found that voters discriminate between issues explicitly framed as campaign issues and other mentions of issues in forming

their agenda during a presidential campaign. The results presented here illustrate the diffusion of television effects far beyond the objects and attributes emphasized in the immediate message. Exposure to televised political information in these experiments resulted in an enriched, activated network of information about the 1988 presidential campaign, as well as, in some cases -- most notably the leadership priming condition -- enhanced knowledge about a specific topic.

There is a methodological weakness in the design of this study that must be considered when drawing conclusions from its results. First, the no-prime control group was not randomly assigned to that treatment. Efforts were made to make sure that the groups either were naturally matched on variables other than priming that could affect the study results, and the two groups were statistically equated on media use and general political knowledge. However, it is still possible that the two groups vary in a systematic way that could confound any cause-effect inference drawn from the findings.

A tentative picture of how the memory retrieval process for political information may operate within individuals emerges from this study and we hope that picture can be used to better understand how agenda setting occurs. In this picture we see activation within the memory network favored pathways between knowledge nodes rather than between salience nodes. Information presented in television messages about Dukakis serving as governor of Massachusetts, for example, may have activated all semantically related pieces of "Campaign 1988" information in memory. One of those activated pieces

of information may have been about Dukakis's role in paroling prisoners in his home state (one of the knowledge questions in this study). Because this information had recently been (indirectly) activated for primed subjects, they were better able to answer knowledge questions than control respondents. Evidently, nodes containing salience information about the issues were either not activated at all or not strongly activated.

Understanding more about how members of the public combine the political news presented on television with the old information they already have stored in memory will add much to our understanding of the agenda setting process. Directions for future research could include looking even further inside the agenda-setting process by focusing on other mental processes, such as memory for the visual and verbal political information presented or the moment-to-moment attention paid to messages, that must occur before individuals convert the information presented by the media into a statement about the most important issues or problems facing the world.

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Table 1. Descriptive statistics for dependent measures.

Index	Mean	S.D.	Range	N	Alpha
Leadership Salience	2.34	.99	.00-4.00	436	---
Economy Salience	3.92	1.08	.00-6.25	391	.85
Dukakis Knowledge	.69	.27	.00-1.0	436	.62
Bush Knowledge	.75	.25	.00-1.0	437	.64
Leadership Knowledge	.72	.29	.00-1.0	437	.59
Economy Knowledge	.66	.47	.00-1.0	438	---

Table 2. Descriptive statistics for control measures.

Index	Mean	S.D.	Range	N	Alpha
Media Exposure	3.36	.80	.80-4.80	414	.65
General Knowledge	.58	.29	.00-1.0	436	.59

Table 3. Spreading activation theory primary and secondary predictions for each of the dependent measures (Leadership and Economy salience; Dukakis, Bush, Leadership and Economy knowledge) by priming experiments (Experiment 2: Dukakis primed, Experiment 3: Bush primed, Experiment 4: Leadership primed and Experiment 5: Economy primed).

	SALIENCE		KNOWLEDGE			
Experiment	Leadership	Economy	Dukakis	Bush	Leadership	Economy
2	+	+	+(*)		+(*)	+(*)
3	+	+	(*)	+	+(*)	+(*)
4	+		+(*)	+	+(*)	(*)
5		+	+(*)	+		+(*)

\+ Priming effect predicted

(*) ANCOVA produced a statistically significant difference between the control and primed groups in the predicted direction

Appendix A
(Indexes used in the study)

Dependent measures

Leadership salience index:
1. I would like you to rate the importance of five national issues that have been raised in the campaign. On a scale of 1 to 5, with 1 being Most Important and 5 being Least Important, how do you rate .. Presidential Leadership?
2. Now I'm going to read to you a list of five things many people feel someone must have to be a successful president. Political experience, Leadership ability, Intelligence, Communication Skills, Strong Ethical Values. Which of these would you consider to be the most important quality for a president to have?

Economy salience index:
1-4. On a scale of one to seven, with one being not at all successful and seven being very successful, how successful do you feel Michael Dukakis/George Bush (depending on respondents' professed choice for president) would be as president in the area of: strengthening our national economy ... creating new jobs ... balancing the federal budget ... reducing the national debt?

Dukakis knowledge index:
1. What is Mike Dukakis' wife's first name?
2. Who is Mike Dukakis' running mate?
3. Mike Dukakis is a veteran of which war?"

Bush knowledge index:
1. Who is George Bush's running mate?
2. George Bush is a legal resident of which state?
3. George Bush is a veteran of which war?

Leadership knowledge index:
1. Is Mike Dukakis for or against legalized abortion?
2. Mike Dukakis has recently drawn criticism for his role in the Massachusetts prison parole system. Why is this?
3. Before becoming vice president, George Bush was director of what major government agency?
4. Is George Bush for or against legalized abortion?

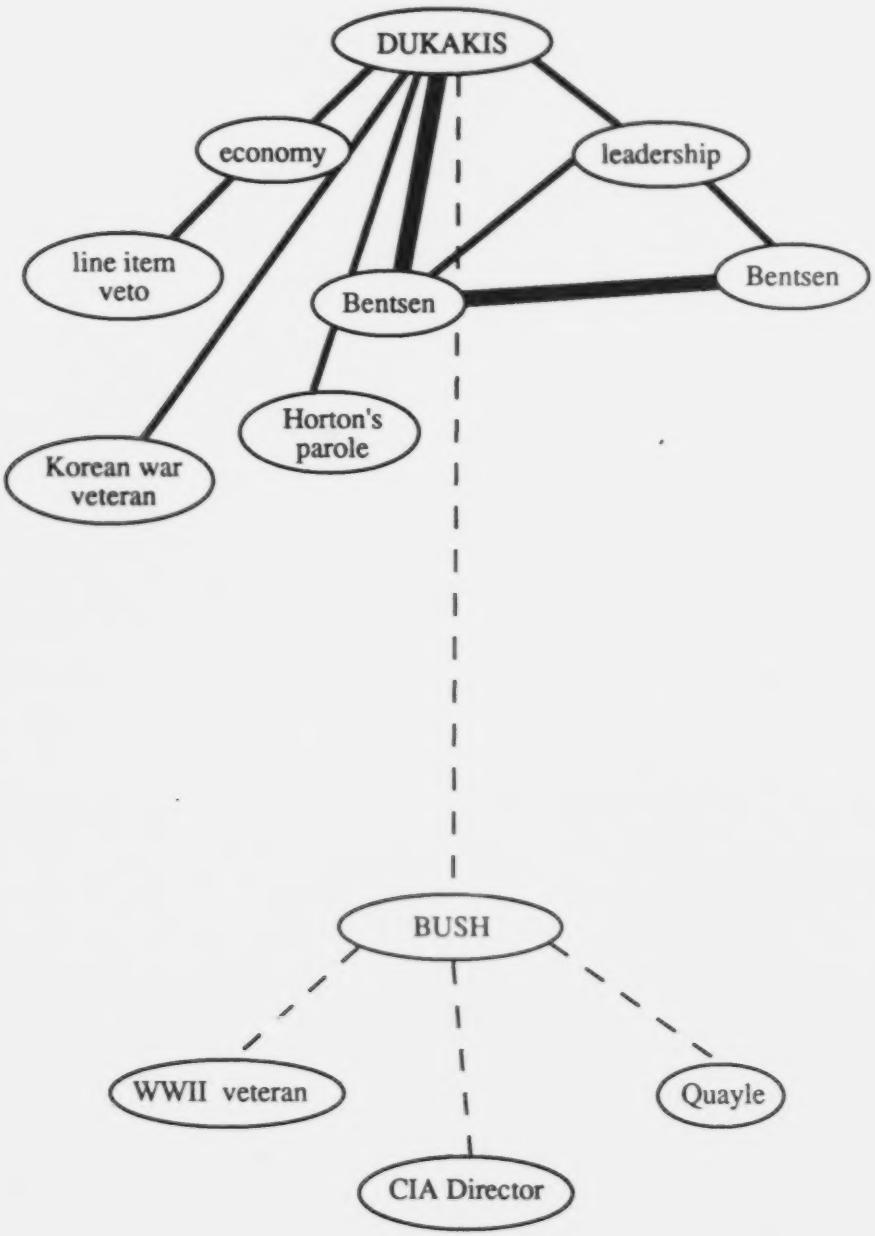
Economy knowledge item:
1. Can the President veto specific items of the federal budget prepared by Congress or must he approve/veto the budget in its entirety?

Control measures

Media exposure index
1. How many days in the last seven did you read a newspaper?
2. How often do you read the following kinds of stories? Tell me whether you read them never, rarely, sometimes, frequently or almost always ... national government and politics?
3. When you read the following kinds of stories how much attention do you pay to them? Would you say you pay them no attention, little attention, some attention, a lot of attention, or very close attention .. national government and politics?
4. How often do you watch the following kinds of television programs? Would you say you watch these programs never, rarely, sometimes, frequently or almost always ... national news?
5. When you are watching TV and the following kinds of programs appear, how much attention do you pay to them? Would you say that you pay no attention, little attention, some attention, a lot of attention, or very close attention ... national news?

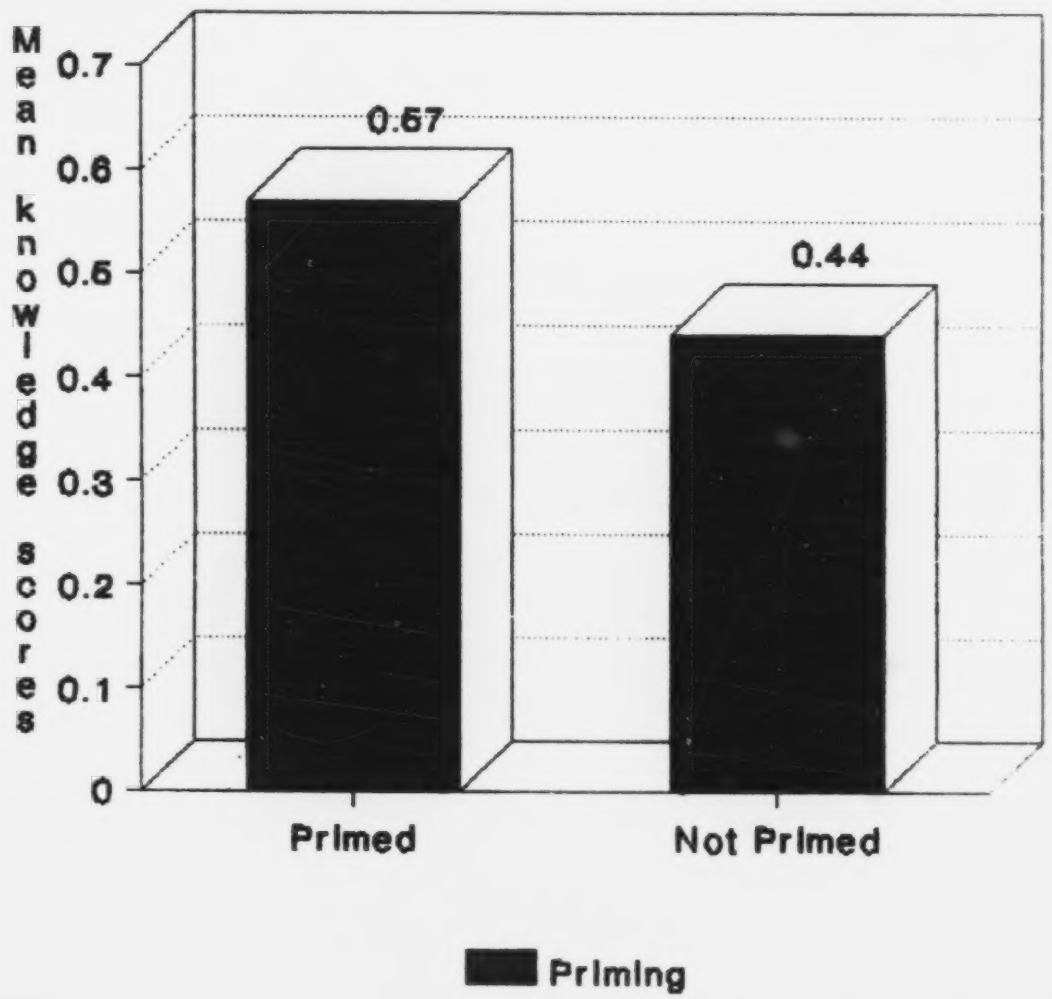
General knowledge index
1. For some time now the Russians have been urging the United States to give up a new defense program as part of their negotiations for nuclear arms reduction. What is the program the Russians are asking the U.S. to give up?
2. South Africa has been in the news lately because of the violence directed against the government's policy of racial segregation. What is the term used to define this policy of racial segregation?
3. Can you name one of Texas' United States senators?
4. Can you name Texas' other senator?
5. Can you name the U.S. Representative for Travis County?"

Figure 1. This illustration of a spreading activation pattern assumes that viewers have just seen information about 1988 Presidential Candidate Michael Dukakis' leadership abilities and stands on economic issues. These viewers have not watched programming that deals with the other presidential candidate, George Bush. The pattern of activation shown is one that would be suggested by spreading activation theory for a situation in which people were primed to think about Dukakis.



Dukakis Primed

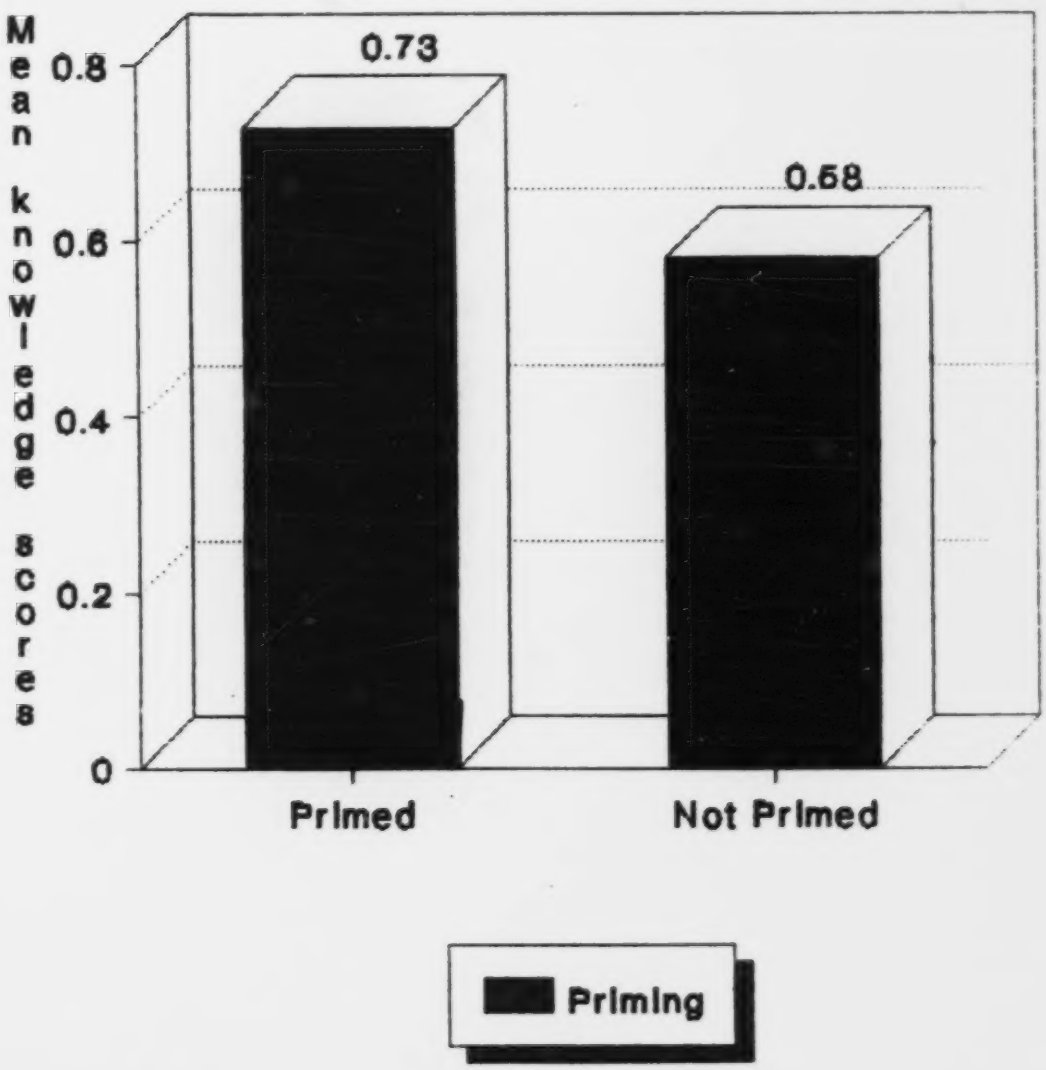
Figure 2. Mean Dukakis knowledge scores as a function of priming.



Main effect
$F(1,244)=3.853$, $p<.05$

Dukakis Primed

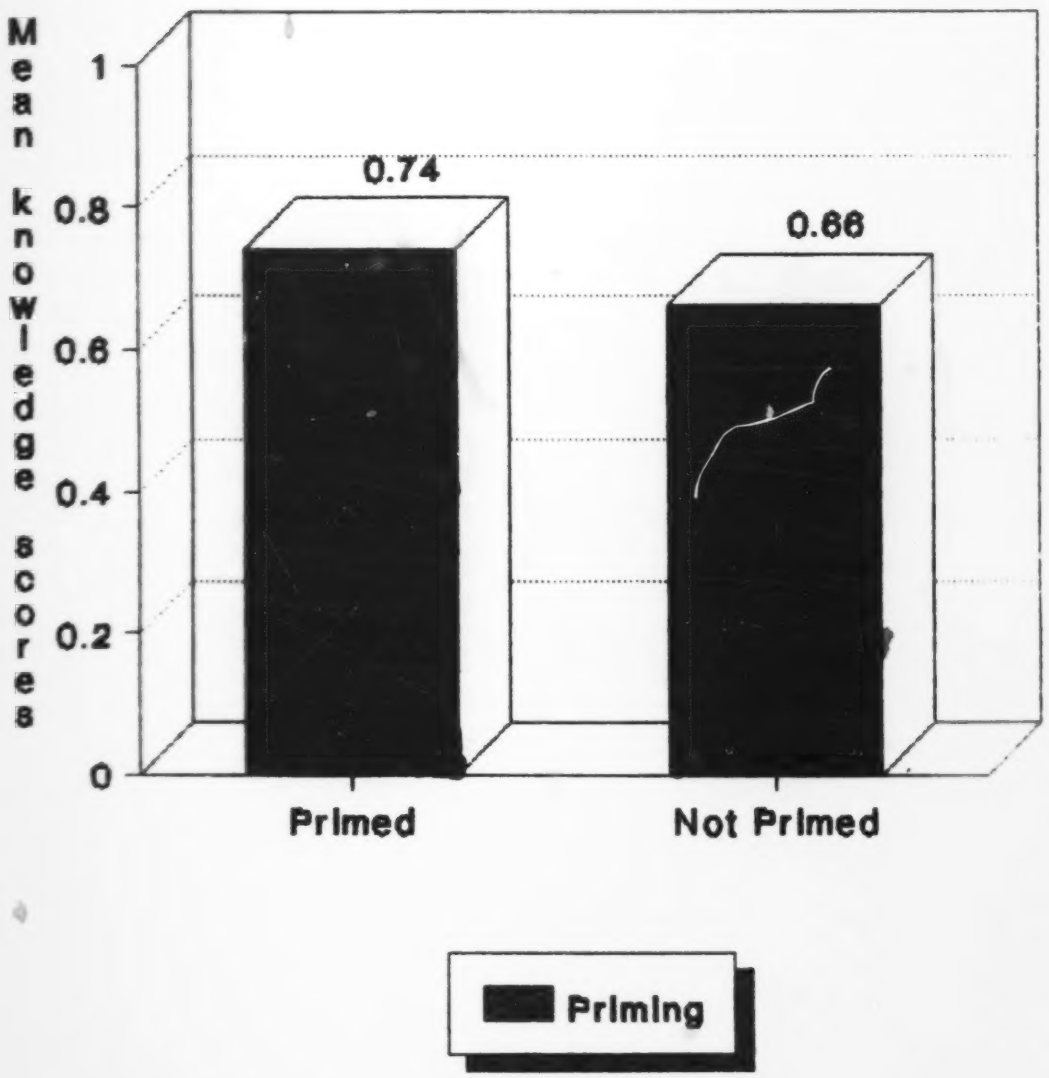
Figure 3. Mean economy knowledge scores as a function of priming.



F(1,244)=4.94, p < .05

Dukakis Primed

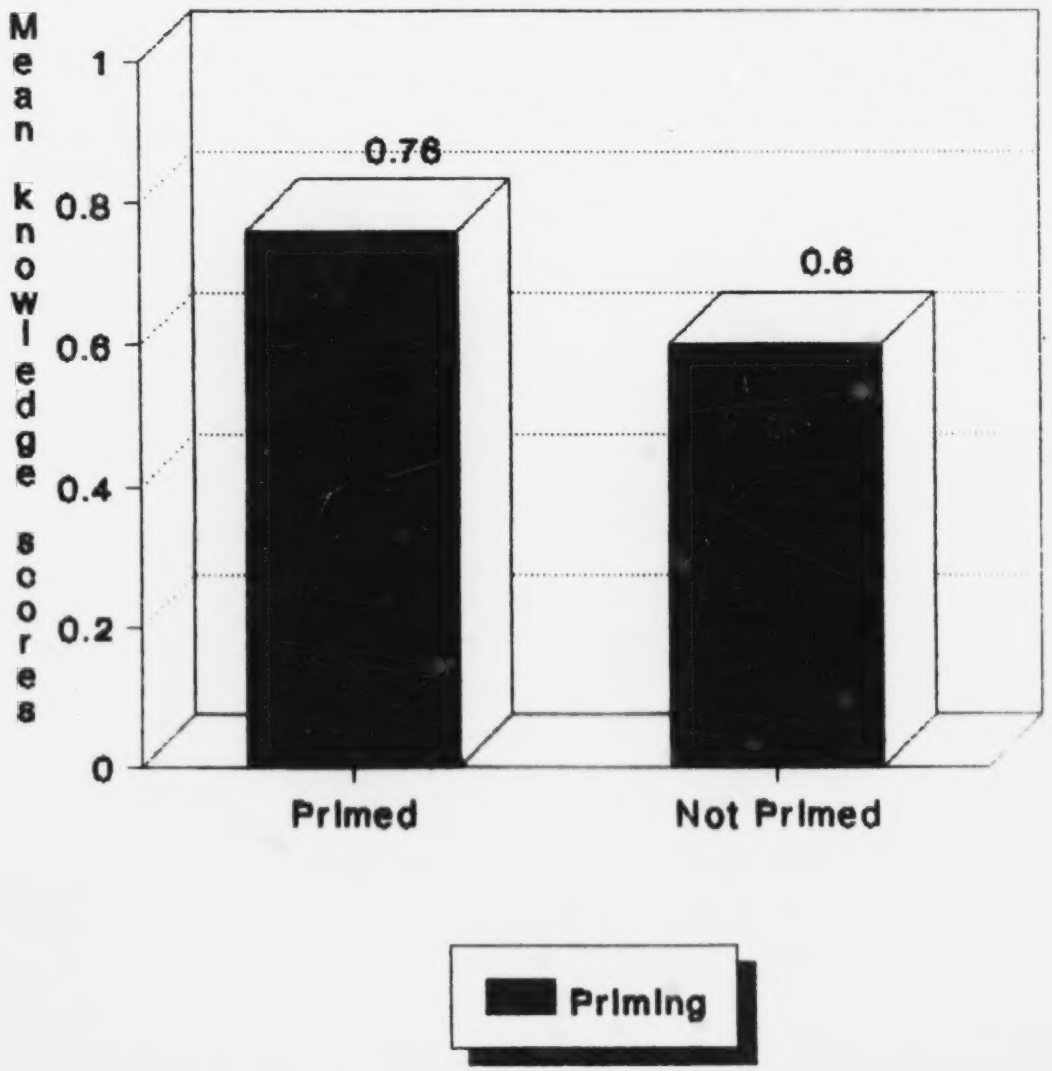
Figure 4. Mean leadership knowledge scores as a function of priming.



F(1,244)=4.492, p<.05

Bush Primed

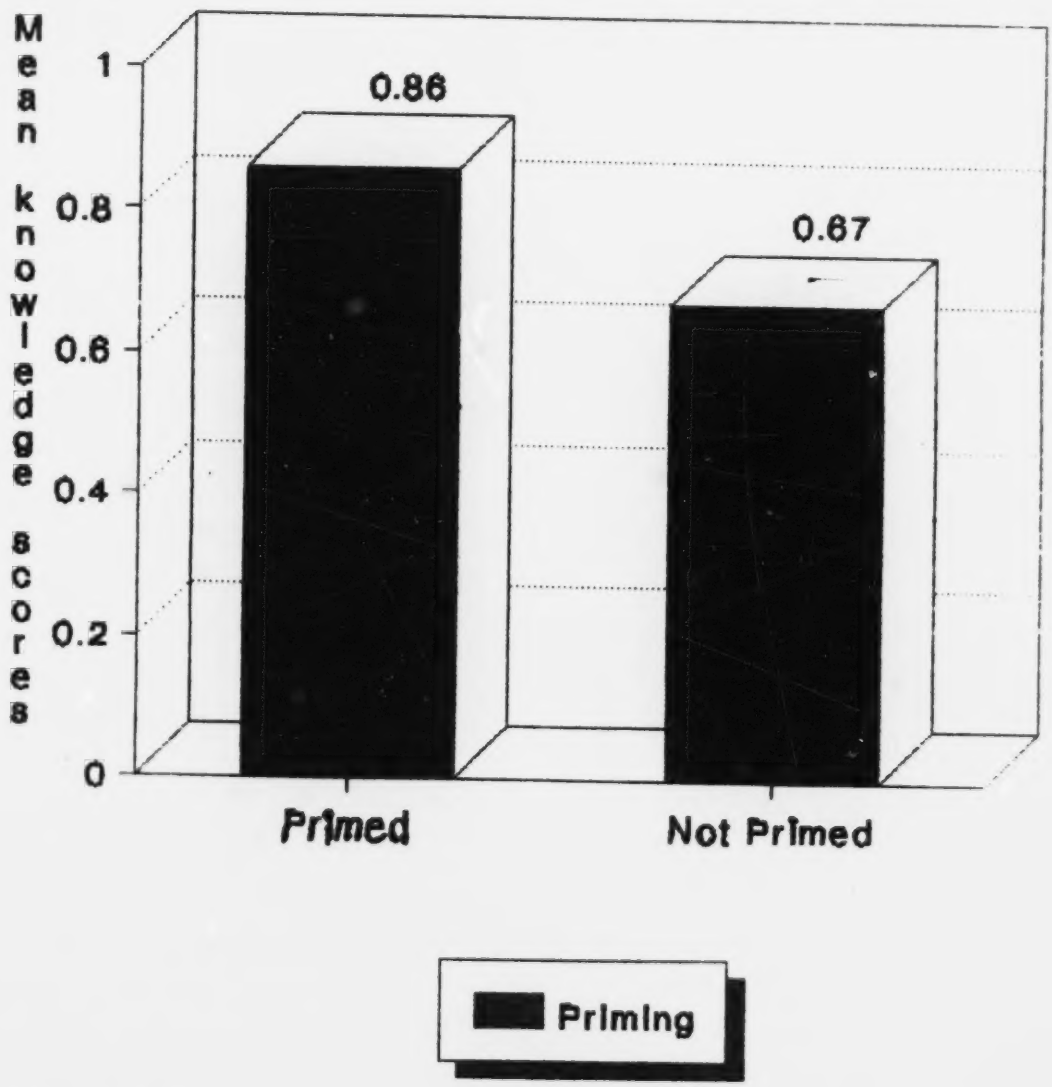
Figure 5. Mean economy knowledge scores as a function of priming.



F(1,247)=4.01, p<.05

Bush Primed

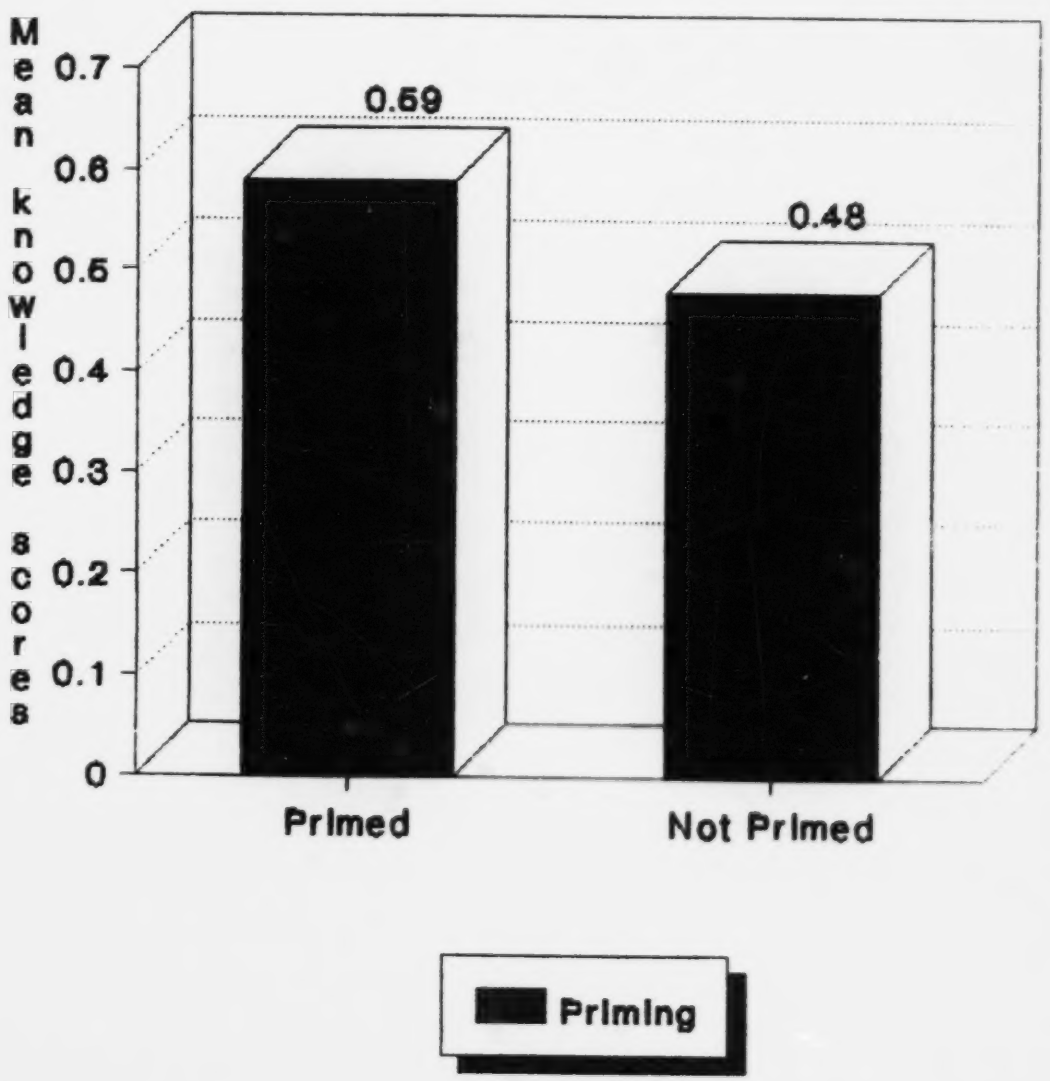
Figure 6. Mean leadership knowledge scores as a function of priming.



F(1,247)=17.667, p<.001

Bush Primed

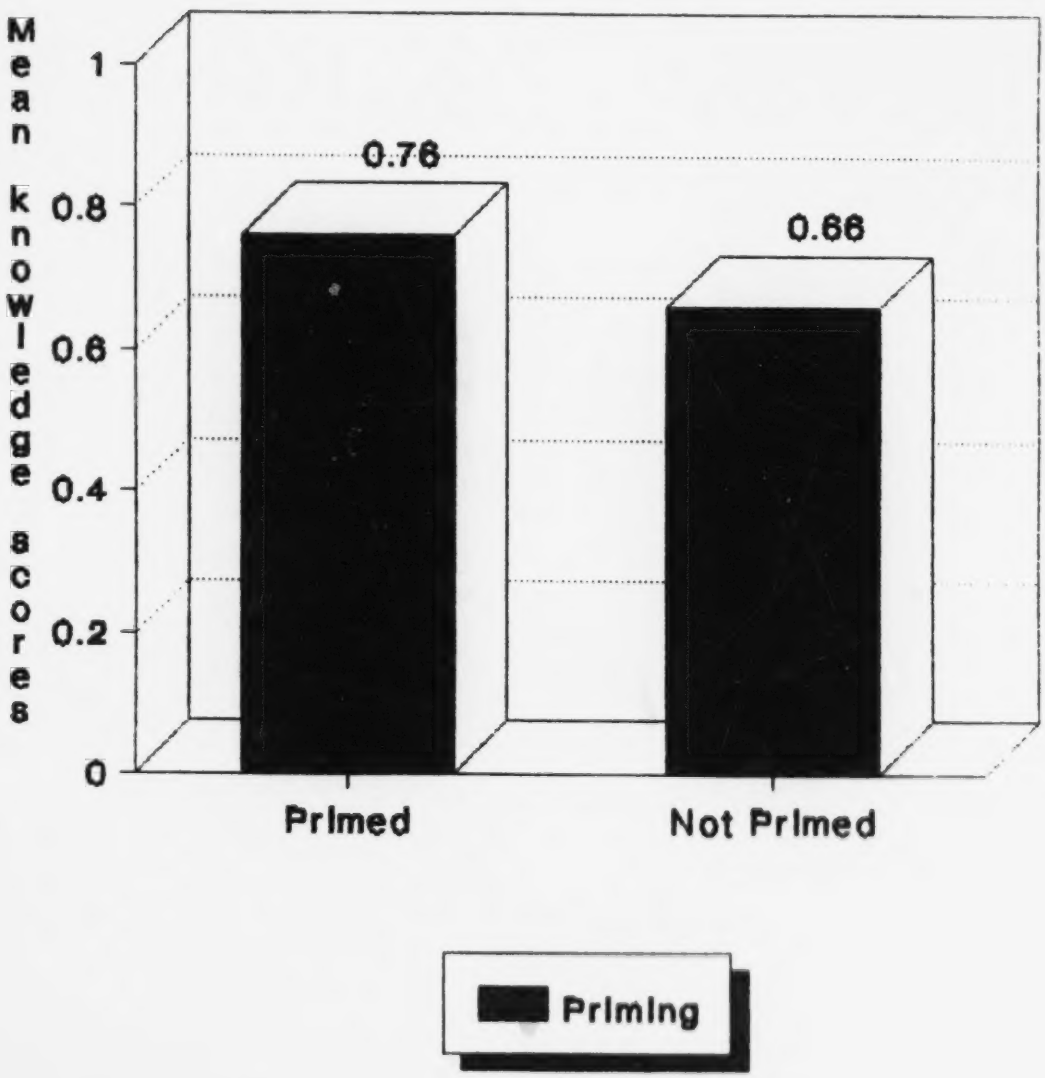
Figure 7. Mean Dukakis knowledge scores as a function of priming.



F(1,247)=8.99, p<.01

Leadership Primed

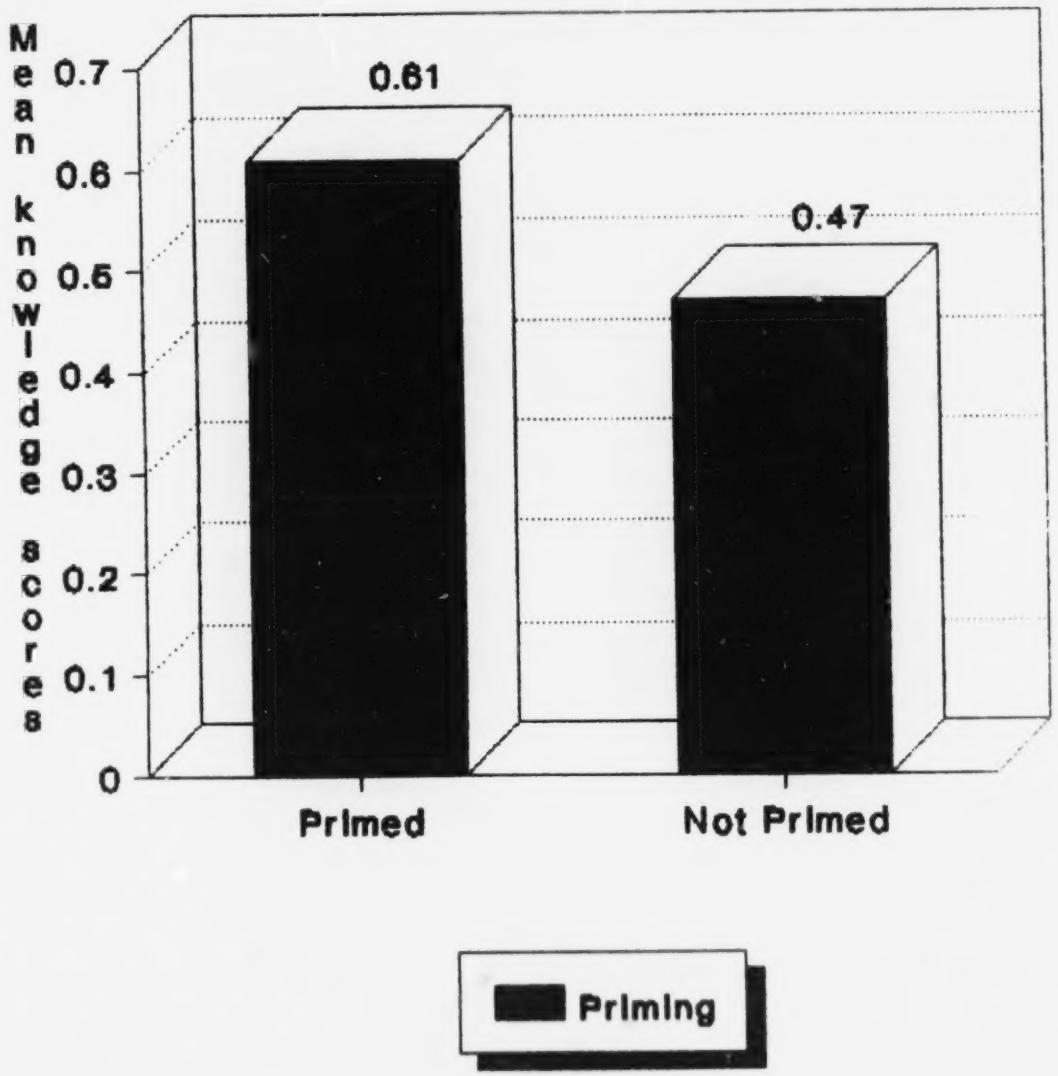
Figure 8. Mean leadership knowledge scores as a function of priming.



F(1,250)=4.71, p<.05

Leadership Primed

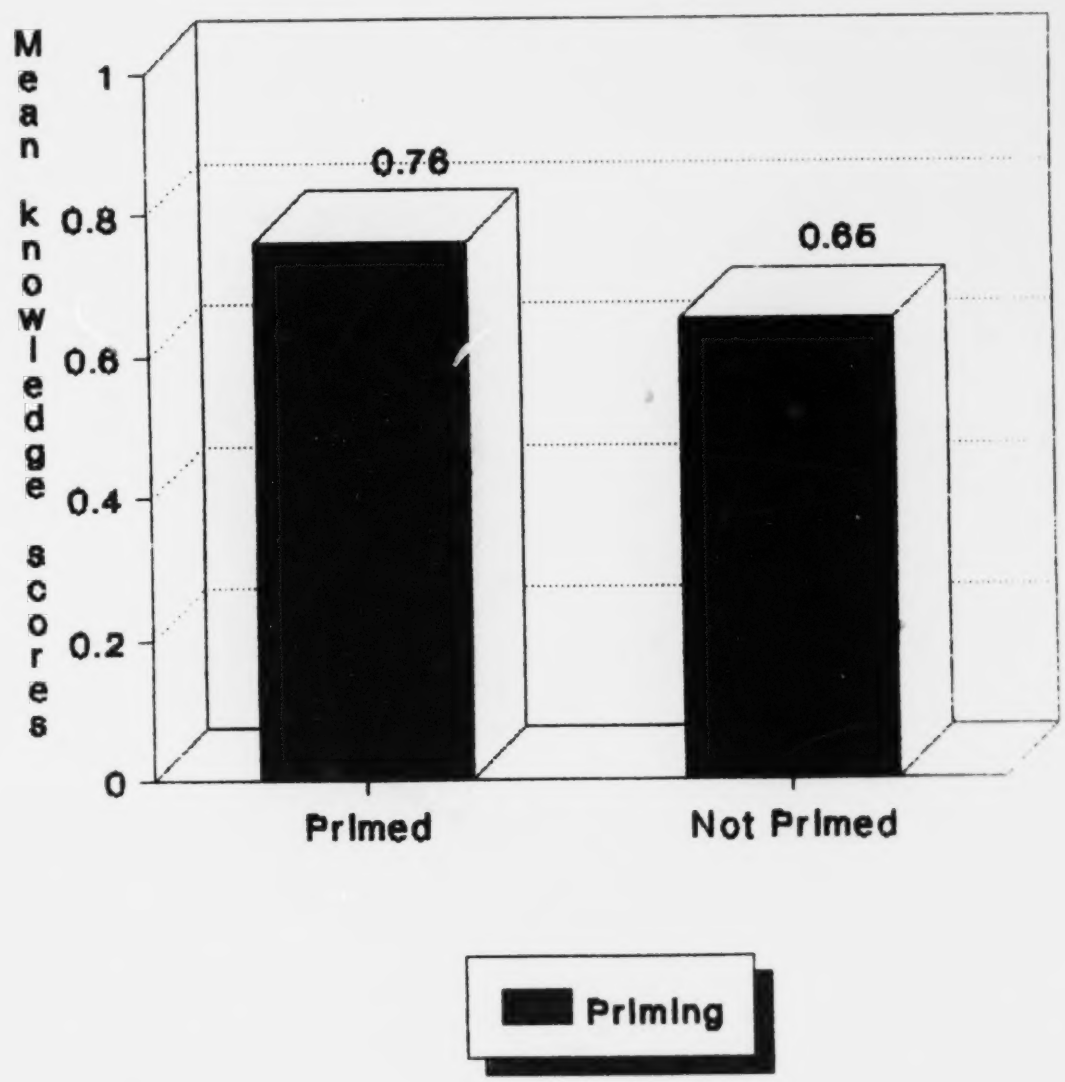
Figure 9. Mean Dukakis knowledge scores as a function of priming.



F(1,250)=18.89, p<.001

Leadership Primed

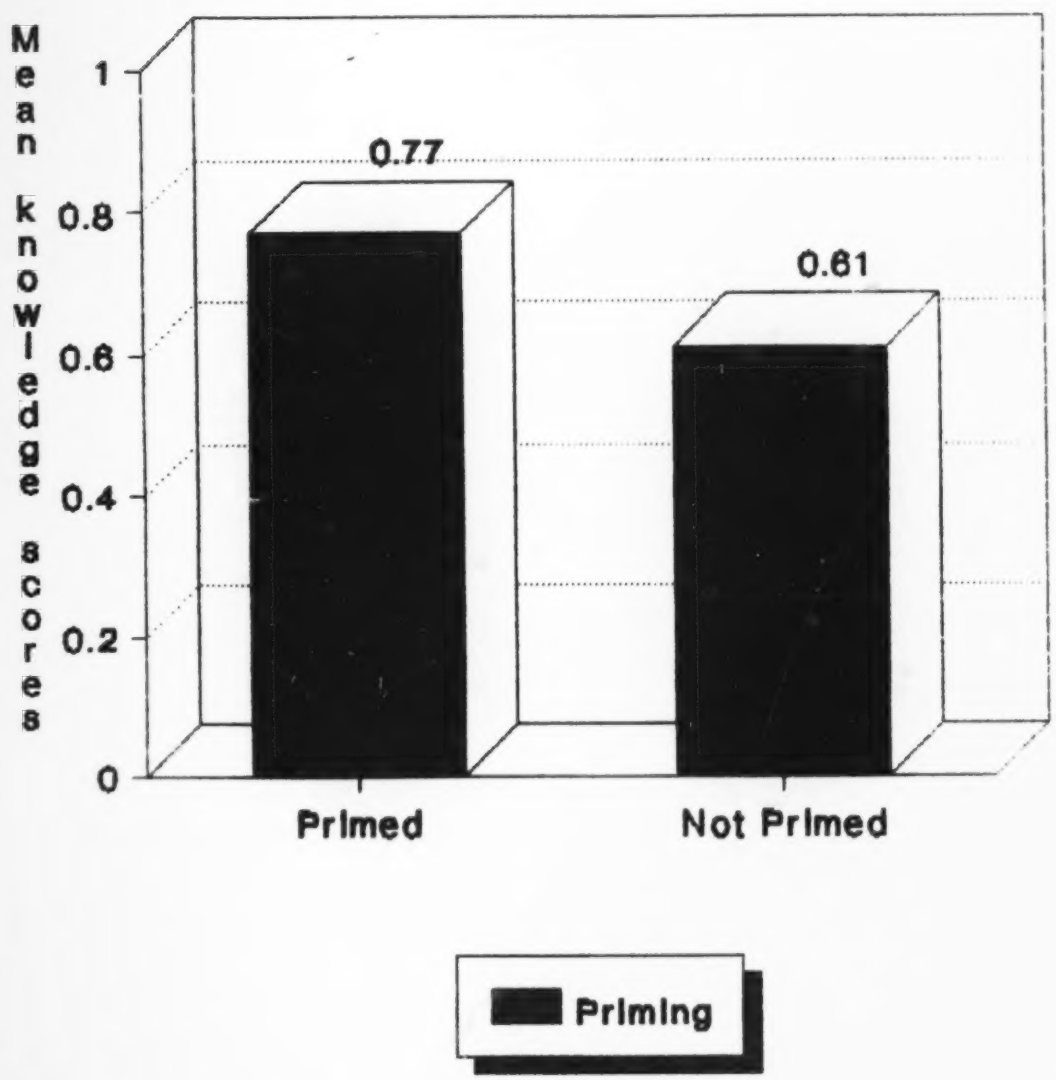
Figure 10. Mean economy knowledge scores as a function of priming.



F(1,250)=4.44 p<.05

Economy Primed

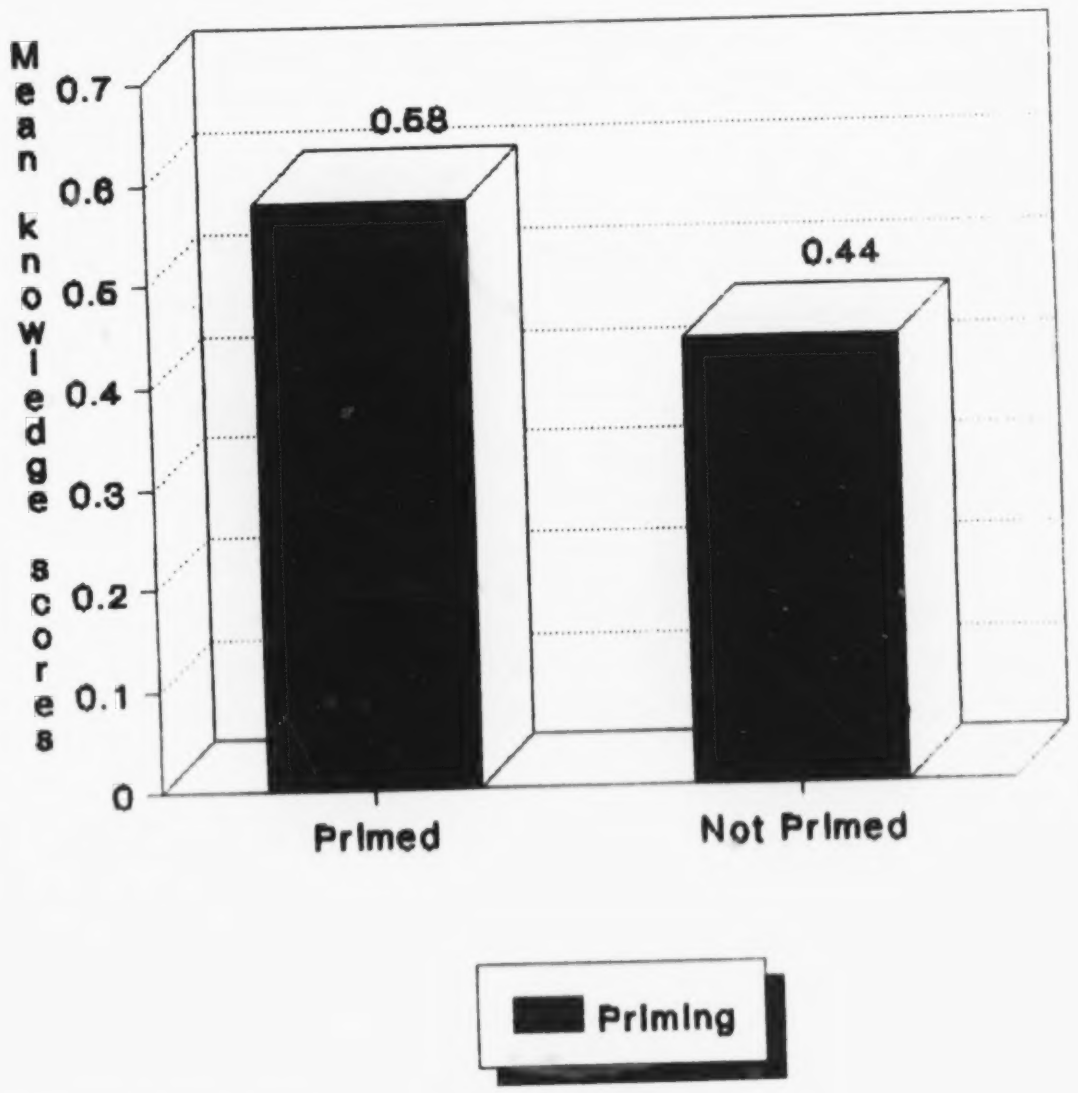
Figure 11. Mean economy knowledge scores as a function of priming.



F(1,249)=4.13, p<.05

Economy Primed

Figure 12. Mean Dukakis knowledge scores as a function of priming.



F(1,249)=9.56, p<.01